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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/057,502	04/09/1998	EIICHI SANO	009683-329	6476

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BUCHANAN INGERSOLL PC
(INCLUDING BURNS, DOANE, SWECKER & MATHIS)
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
NGUYEN, LAM S	
ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 01/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/057,502	SANO ET AL.	
	Examiner	Art Unit	
	LAM S. NGUYEN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,6-8,11,14-16,26,28,29,34,35,37 and 39-41* is/are pending in the application.

4a) Of the above claim(s) *6,7,11,14-16,28,29,35,37,40 and 41* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,8,26,34 and 39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 April 1998* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/06/2005 has been entered.

Claim Objections

Claims 3 and 26 are objected to because of the following informalities: The claims are identical because the "smaller dot" cited in claim 3 is actually the "smoothing dot" recited in claim 26 based on the definition in claim 39 that "the smoothing droplet being smaller than the image forming droplet" (lines 6-7), wherein "the smoothing droplet to form a smoothing dot" (lines 9-10). Appropriate correction is required.

Claim 39 is objected to because of the following informalities: The claim recites the element "*by ejecting the smoothing dot at the same speed as that of the image forming dot*" on the last line. This claim element should be corrected as "*by ejecting the smoothing droplet at the same speed as that of the image forming droplet*" because the ink jet head ejects "the droplet" to form "the dot", but not "the dot" itself.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 3 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 3 recites the limitation "said smaller dot" (lines 2-3) with insufficient antecedent basis for this limitation in the claim. Claim 39 recites the limitation "the image forming dot" on line 11 with insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 39 is rejected under 35 U.S.C. 102(e) as being anticipated by Kimura et al. (US 6270199).

Kimura et al. discloses an ink jet printer ejecting a plurality of kinds of ink droplets of different sizes from a single nozzle depending upon data to be printed (*FIG. 19A-C*), thereby forming an image on a prescribed recording medium using dots of sizes corresponding to the sizes of the ink droplets, comprising:

an ink jet head for ejecting an image forming droplet and a smoothing droplet from a single nozzle based on data to be printed (*column 5, lines 35-57: To perform a smoothing operation, an ejection outlet selectively ejects droplets having different sizes corresponding to the sizes of the bubbles. In Tables 1-2 and FIG. 14A-B show that by turning the heaters 2-1, 2-2 ON or OFF, the ejection amount is controlled. In other words, different size ink droplets are*

ejected from the same nozzle), the smoothing droplet being smaller than the image forming droplet, thereby printing dots of sizes corresponding to the sizes of the ink droplets on a prescribed recording medium (*FIG. 19A-C: The biggest dots are the image forming dots and the smaller dots are the smoothing dots*),

a smoother for performing a smoothing process using the smoothing droplet to form a smoothing dot (*FIG. 19A-C: The smaller dots are the smoothing dots*), wherein the distance between a center of the smaller size smoothing dot and a center of the image forming dot is smaller than the pitch of the image forming dot (*FIG. 19A-C: The distance from the center of a smaller dot to the center of an adjacent biggest dot is smaller than the pitch which is the distance between the centers of the adjacent biggest dots*), and

a controller for controlling the smoother, thereby maintaining constant the speed of ejection of the ink droplet forming the smoothing dot and changing the timing of ejection of the ink droplet forming the smoothing dot, by ejecting the smoothing dot at the same speed as that of the image forming dot (*FIG. 19B and TABLE 1-2: Since the same voltage 24V is applied to eject the drops that form either the small or large dots, the ejection speed of the drops is constant regardless to the size of the droplets (Please see the Response to Argument for further explanation). Moreover, since each small dot is not located at the center of a pixel like the big dot, the ejection timing of the drops forming the small dots is changed respectively to the ejection timing of the drops forming the big dots*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 3, 8, 26, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al. (US 6270199) in view of Koitabashi et al. (US 6325492).

Kimurai et al. discloses the claimed invention as discussed above except determination means for determining a direction of the printing position of said smaller dot/smoothing dots, said controller controlling the printing position of said smaller dot/smoothing dots according to the determination, wherein said smaller dot and said image forming dot are ejected during a single scan, and wherein in said timing control, the timing of applying signal voltage to print said smaller dot is controlled.

Koitabashi et al. discloses an ink jet apparatus employing an ink jet head that is capable to operate in a smoothing mode, in which a direction of printing positions of smoothing dots (*FIG. 43, the small dots*) is determined to control the printing position of the smoothing dots (*column 26, lines 6-17*), wherein the smaller dots and image forming dots (*FIG. 3: The large dots*) are ejected during a single scan (*FIG. 47-56 and column 27, lines 10-17*), and wherein the timing of applying signal voltage to print the smoothing dots is controlled (*column 27, lines 64-67*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the controller disclosed by Kimura et al. to include means for determining a direction of the printing position of the smoothing dots as disclosed by Koitabashi et al. The motivation for doing so would have been to be able to locate the smoothing dots (the

interpolating dots) in accordance to the presence and absence of the forming dots (the original dots) as taught by Koitabashi et al. (*column 26, lines 7-14*).

Response to Arguments

- Applicant's arguments with respect to claim 39 regarding the 103 rejection suggesting the modification of Koitabashi et al. by the teaching of Kimura et al. have been found persuasive. As a result, such rejection has been withdrawn.
- Applicant's arguments filed 12/06/2005 regarding the 102 rejection to claim 39 (based on the Kimura reference) have been fully considered but they are not persuasive.

The applicant argued that Kimura does not disclose the subject matter related to maintenance of a constant speed of ejection of the ink droplet forming the smoothing dot and changing the timing of the ejection of the ink droplet forming the smoothing dot, by ejecting the smoothing dot at the same speed as that of the image forming dot. Rather, Kimura discloses a situation where a constant 24V is applied to cause a bubble that ejects different size ink droplets during printing. The applicant therefore generally concludes that as the volume of ejected ink droplets increase, the speed of ejection will decrease, and vice versa. The speed ejection thus is varied.

First of all, the examiner would like to point out that the above applicant's general conclusion conflicts with the present invention, in which the volume/size of the smoothing droplet is defined as being smaller than that of the forming droplet. So based on the above applicant's conclusion, the ejection speed of these two droplets cannot be the same (as claimed) due to the increase or decrease in volume of one droplet with respect to the other.

However, as disclosed in the specification and shown in FIGs. 8-10 that if the ejection voltage is varied from about 15V to 25V, the droplet volume may be changed (FIG. 10) but the ejection speed is maintained (FIG. 9). Therefore, the above applicant's conclusion only corrects in a case that the ejection voltage is in the range of 15-25V.

As a result, Kimura's ejection voltage of 24V, that causes the ink ejection of the smoothing droplets and the forming droplets of different sizes, anticipates the present invention's ejection voltage (15-25V). Consequently, Kimura's smoothing droplets and forming droplets are ejected at the same speed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
11/12/2006

Hai Phan
HAI PHAM
PRIMARY EXAMINER